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P3-174 NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6

Brain metastases from lung cancer and radiosurgery: 6 years follow up comparing the RPA, SIR and BSBM patients stratification systems

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Objective: to compare three stratification systems, the recursive partitioning analysis (RPA), the score index for radiosurgery (SIR) and the basic score for brain metastases (BSBM) with a 6 years follow up for patients with brain metastases (BM) from lung cancer and treated by radiosurgery.

Material and Methods: between February 2000 and December 2005, 117 patients with 275 brain metastases were treated with a Leksell Gamma Knife model C. Median marginal dose was 20 Gy at a median 50 % isodose.

Results: median survival (MS) for the entire population is 12 months. The survival rate is respectively 50, 33, 12, 10 and 5 % at 1, 2, 3, 4 and more than 5 years follow up. Univariate analysis confirms the predictive value of the three systems. MS is 22 months for RPA class I, 12 months for RPA class II and 2 months for RPA class III, ($p < 0,0001$). According to SIR system, MS is 21, 12, 6 and 3 months for scores 8 to 10, 5 to 7, 4 and 0 to 3 respectively, ($p < 0,0001$). According to BSBM system, MS is 23, 8, 6 and 2 months for scores 3, 2, 1 and 0 points respectively ($p < 0,0001$).

Conclusions: this comparative study confirms the usefulness of all three systems of classification to predict the outcome of patients treated by radiosurgery. Patients who will benefit the most from RS belong the groups RPA class I-II, SIR 5-10 and BSBM 2-3. Patients with BSBM score 0, SIR score 0 to 3 and RPA class III have a MS around 3 months and are not likely to benefit from radiosurgery.

P3-175 NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6

Prediction of radiation pneumonitis by dose-volume histogram parameters, especially focused on main bronchus

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Background: Recently the risk of radiation pneumonitis (RP) developing after thoracic irradiation has been reported to depend on the irradiated normal lung volume. Although the hilar region has been considered to play a key role in developing PR, there is no report about dosimetric analysis of the hilar region. Hence, we tried to evaluate dosimetric parameters of not only the normal lung tissue but also the hilar region. However, because it was difficult to contour the hilar region precisely, each main bronchus was employed in stead of the hilar region.

Methods: Forty two patients treated with radiation for thoracic malignancy (lung cancer; 35 patients and mediastinum tumor; 7 patients) were retrospectively analyzed. RP was graded according to Common Terminology Criteria for Adverse Events version 3.0. Pneumonitic event that was not due to infection (proven by blood or respiratory culture) or tumor progression was scored as radiation pneumonitis within 3 months after the completion of radiotherapy. Univariate analyses was performed the following dosimetric factors generated from the dose-volume histogram (DVH); mean lung dose (MLD), relative volumes of lung receiving more than a threshold dose (Vdose). Each main bronchus was defined that the ipsilateral main bronchus was on the side containing more than 50% of the PTV and the other main bronchus was the contralateral. Mean bronchial dose (MBD) and relative volumes of bronchus receiving more than a threshold dose (BrVdose) were generated from the DVH. Also, potential predictive clinical factors examined included age, performance status, chemotherapy, chronic obstructive pulmonary disease (COPD), lactate dehydrogenase (LDH), diabetes mellitus (DM), hypertension, and Brinkman Index.

Results: Radiotherapy was delivered at 2.0 Gy fractions once daily to a total of 34-70 Gy (median 60) with a median follow-up of 7.9 months. Of them, 16 patients were received concurrent chemotherapy including platinum agents. Grade of 0, 1, 2, 3, and 5 RP was observed in 12, 15, 11, 3 and 1 patients, respectively. V25 was marginally significant ($p=0.07$). On the other hand, ipsilateral BrV15, 20, 25, 30, 60 and MBD and contralateral BrV60 were significantly associated with the development of grade 2 or worse RP ($p<0.05$). Among them, ipilateral BrV60 was most significant ($p=0.0012$). There is no significant factor among the clinical factors.

Conclusions: The bronchial dosimetric parameters, especially high dose, were more useful predictive factors than normal lung tissue dosimetric parameters for RP.

P3-176 NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6

Prognostic factors for patients with advanced and metastatic non small cell lung cancer (NSCLC): classical factors= performans status (PS), gender and extension of disease; new factors= expression of EGFR, p53 and cell proliferation defined by Ki67

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The aim of the study was to assess the relation between new factors prognostic (expression of EGFR, p53, cell proliferation defined by the monoclonal antibody Ki67); classical factors prognostic (performans status PS, age, gender, extension of the disease) and survival of patients with non-small cell lung cancer stage III and IV.

Patient and Methods: 80 patients were included in this study (male 72 / female 8); the median follow up was 15 months.

All tumor samples were formalin-fixed and paraffin-embedded. The expression of p53, EGFR and Ki 67 were assessed with the use of immunohistochemically (IHC). P53 was assessed in 66 cases, EGFR in 73 cases and cell proliferation defined by the monoclonal antibody Ki67 in 63 cases.

Results: The expression of p53 was positive in 20 % of cases, EGFR was positive in 58,7 % of cases and cell proliferation in 40 % of cases.

Survival was estimated from the date of first cycle of chemotherapy using median survival and the Kaplan-Meier survival analysis method. for each factor.

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